Small Business Innovation Research/Small Business Tech Transfer

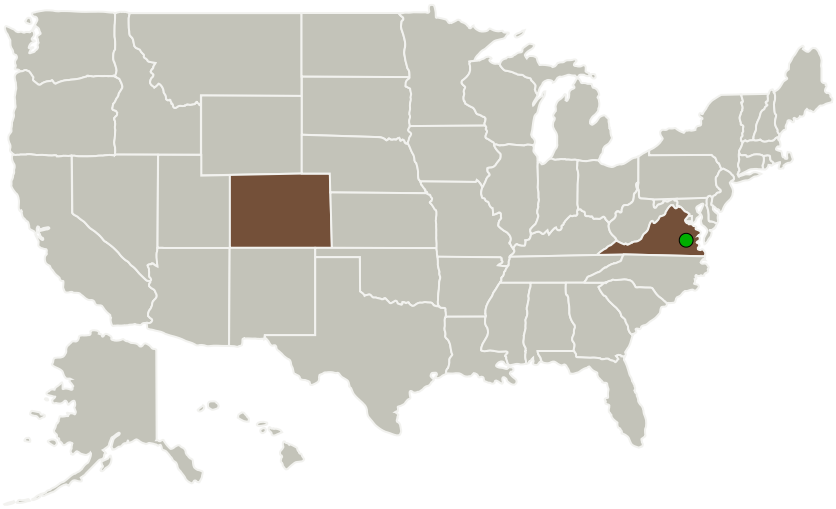
Non-mechanical High-Resolution Low-SWaP Lidar, Phase I

Completed Technology Project (2017 - 2017)

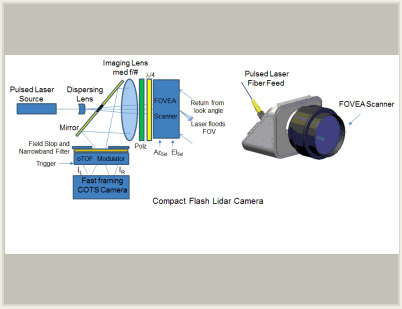
Project Introduction

This Phase I effort will be a proof-of-concept demonstration of a non-mechanical (no moving parts) 3D lidar system that provides in real time high-resolution terrain point cloud information. The objective is to build a compact sensor that meets the low size, weight and power (SWaP) requirements of small autonomous space vehicles, robots and rovers being developed for future NASA planetary and asteroid/comet exploration. The lidar sensor will provide a variable angular resolution of 0.04 degrees by 0.04 degrees to 0.005 degrees by 0.005 degrees with <10cm range precision over an 80 degrees by 80 degrees field of regard and 200 meter range in bright sun light. This will be accomplished using a unique electro-optic scanner that provides the largest angle-aperture product of any commercially-available non-mechanical scanning technology.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Boulder Nonlinear Systems, Inc.	Lead Organization	Industry	Lafayette, Colorado
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



Non-mechanical High-resolution Low-SWaP Lidar, Phase I Briefing Chart Image

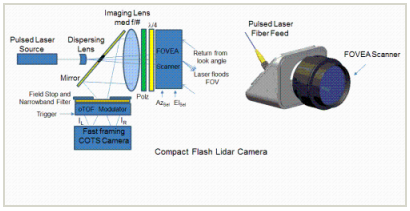
Table of Contents

Non-mechanical High-Resolution Low-SWaP Lidar, Phase I

Completed Technology Project (2017 - 2017)

Primary U.S. Work Locations	
Colorado	Virginia

Images



Briefing Chart Image
Non-mechanical High-resolution Low-SWaP Lidar, Phase I Briefing Chart Image
(https://techport.nasa.gov/image/136052)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Boulder Nonlinear Systems, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

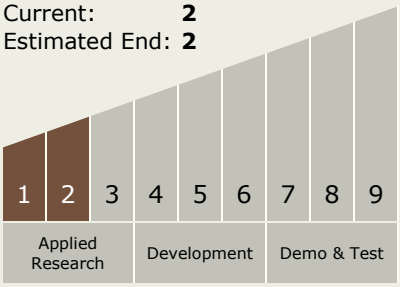
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Steve Serati

Technology Maturity (TRL)

Start: **1**
Current: **2**
Estimated End: **2**



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Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.4 Vehicle Systems
    - TX09.4.7 Guidance, Navigation and Control (GN&C) for EDL